

New Claims

New Claims 21-25 are added in the present paper. Support for new Claims 21-25 is found in the specification as originally filed at least at page 18, line 4 through page 19, line 21. No new matter is added.

Claim 21 recites:

[a] dielectric layer comprising a plurality of charge traps located in close proximity to an interface between the dielectric layer and the channel region, and [a] channel region [having] a graded doping profile that provides a dopant concentration that peaks at a relatively small distance below the interface between the dielectric layer and the channel region. (Emphasis added.)

The charge traps beneficially allow the semiconductor device to "achieve[] a negative differential resistance mode by using a dynamically variable and reversible threshold voltage ... based on a temporary charge trapping/detrapping mechanism" (specification as originally filed, page 6, lines 21-24), while the graded doping profile enables the formation of "a built-in electric field, which in turn serves to confine electrons near the surface of the semiconductor, and thus further enhance[] the injection of electrons into the trapping sites in the dielectric."

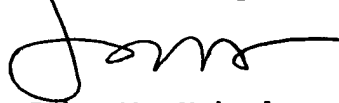
Thompson does not teach or suggest either a "dielectric layer comprising a plurality of charge traps" or a "channel region [having] a graded doping profile" as recited by Claim 21. Therefore, Claim 21 is allowable over Thompson under 35 U.S.C. 102(e). Claims 22-25 depend from Claim 21, and are therefore allowable over Thompson for at least the same reasons that Claim 21 is allowable. Accordingly, Applicant respectfully requests consideration and allowance of Claims 21-25.

CONCLUSION

Claims 1, 2, 4, 8-15, and 17-25 are pending in the present Application. Applicant notes with appreciation the allowance of Claims 8-13. Reconsideration and allowance of Claims 1, 2, 4, 14, 15, and 17-20 in light of the above amendments and remarks is respectfully requested. Consideration and allowance of new Claims 21-25 in view of the above remarks is also respectfully requested.

If there are any questions, please telephone the undersigned at (408) 451-5903 to expedite prosecution of this case.

Respectfully submitted,



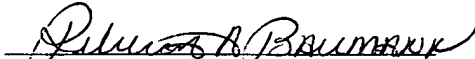
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11/30/2004

Date


Signature: Rebecca A. Baumann